REMARKS

The Official Action of 21 April 2006 has been carefully considered and reconsideration of the application as amended is respectfully requested.

Applicants hereby affirm their election of Group I (Orn-Pro) and the species L-Abrine-Orn-Pro. The Examiner's determination that the elected species is free of the art is noted with appreciation. Also noted with appreciation is the Examiner's determination that the species of claim 5, group (a) is free of the art. New claim 28 has been added, which is directed to that species.

The claims have been amended to remove the bases for the claim objections appearing on pages 3-4 of the Official Action. In this respect, claims 3 and 5 have been cancelled and rewritten as new claims 29 and 30 in accordance with the spacing requirements set forth by the Examiner.

The claims have also been amended to remove the bases for the rejections under 35 USC 112, second paragraph appearing at pages 4-7 of the Official Action. In particular, the formula in claim 1 has been amended to correct what one of skill in the art would have understood to be a clerical error in the definition of X_1. Moreover, one of skill in the art would understand from the specification as filed that CX-NH is part of the chain C-X-NH and that CX_1 is interposed between X and NH by normal peptide bonds.

One of skill in the art would also understand that the recited formula in claim 1 refers to the second alternative discussed by the Examiner on page 5 of the Official Action. As acknowledged by the Examiner in the first paragraph on page 6 of the Official Action, the specification as filed, including the figures and description of the synthesis of the peptides, make this clear. Applicants accordingly respectfully submit that the formula is sufficiently definite to satisfy the dictates of 35 USC 112, second paragraph.

With particular respect to the Examiner's contention that the term "unusual amino acid" is indefinite, Applicants respectfully disagree and point to the USPTO's own "Classification Definitions" (copy attached), wherein the term "unusual amino acid" is used to classify amino acids in all major art classes. Applicants respectfully submit that this term is well known to those of skill in the art and is sufficiently definite to satisfy the dictates of 35 USC 112, second paragraph.

In view of the above, Applicants respectfully submit that the claims are free of the informalities noted by the Examiner on pages 3-7 of the Official Action, and are otherwise sufficiently definite to satisfy the dictates of 35 USC 112, second paragraph.

Claims 1, 4, 6-8, 24 and 26 stand rejected under 35 USC 102(b) as allegedly being anticipated or, in the alternative, under 35 USC 103(a) as allegedly being obvious over Ondetti. Applicants respectfully traverse these rejections.

Applicants respectfully note that, although the term "having" is open, the claims recite a peptidomimetic compound having the recited formula. As acknowledged by the Examiner, Ondetti describes peptides that may **include** heterocyclic amino acids, but the described compounds are not peptidomimetic compounds of the recited formula. So, for example, the compound in Ondetti to which the Examiner calls attention comprises nine (9) amino acids with a normal peptide backbone that does not fall within the definition of the claimed peptidomimetic compound with the formula as recited in claim 1.

Moreover, there could have been no motivation in the prior art to modify Ondetti to arrive at the claimed peptidomimetic compound of the recited formula, because this would impermissibly change the principle of operation of the reference. See MPEP 2143.01(VI) ("If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious."). The differences and advantages of the claimed peptidomimetic compounds as compared with the prior art peptide-based ACE inhibitors exemplified by Ondetti is explained at length in the Detailed Description of the present specification.

In view of the above, Applicants respectfully submit that all prior art and other rejections and objections of record have been overcome and that the application is now in allowable form. An early notice of allowance is earnestly solicited and is believed to be fully warranted.

Respectfully submitted,

CLIFFORD J. MASS
LADAS & PARRY LLP
26 WEST 61ST STREET
NEW YORK, NEW YORK 10023
REG. NO.30,086(212)708-1890

CLASS 930, PEPTIDE OR PROTEIN SEQUENCE

SECTION I - CLASS DEFINITION

Class 930 consists of two wholly separable parts, cross - reference art collections 10-320 and digests 500-822. This class is intended to be used as a searching area for patents which disclose an identifiable peptide or protein sequence derived from at least four specified named amino acids. Rules of placement into these areas vary, and although any search in this class is optional, searching Class 930 is useful.

It should be noted that the patents in art collections 10-320 must contain an actual amino acid sequence. A patent containing a reference, in name only, to a peptide or protein compound with a known structure is not included. For example, though the amino acid sequence of insulin is well-known, unless a sequence of at least four amino acids from the insulin structure is shown in the patent, it is not included in these art collections.

The following steps pertain to placement and search.

(1) Compounds containing a modified or unusual amino acid (art collections 20 -25) are placed in all appropriate art collections.

(2) The sole presence of a nonpeptide or abnormal peptide link in a linear peptide is not considered an indication of a modified or unusual amino acid. (See art collection 30.)

(3) See only art collection 22 for halogen containing compounds which are radioactive.

(4) The sulfur contained in the compounds of art collection 24 must be other than, or must be in addition to, that naturally occurring in one or more of the natural amino acids, cysteine, cystine, methionine.

(5) Art collection 30 does not include those peptides which contain as the sole nonpeptide or abnormal peptide link, an interchain disulfide bridge.

(6) Compounds included in art collections 200 (bacterial), 220 (parasitic), and 220-224 (viral0, are only those homologous to the microorganism.

(7) Compounds containing a cys-cys disulfide bridge between nonadjacent cysteine residues are placed in art collection 280 with the exception of those compounds such as atrial natriuretic peptide, vasopressin, or others containing disulfide bridges which are appropriate for art collection 40-170.

(8) Art collection 270 does not include peptides or proteins which are cyclic solely due to intrachain disulfide bridges, nor does it include peptides or proteins which are appropriate for art collections 40-170.

(9) Art collection 320 is incomplete. It is intended as a repository for compounds which have been specifically modified to prevent enzymatic degradation, but which are not more appropriately placed in any of the other nonmainline art collections.

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

(A) CROSS-REFERENCE ART COLLECTIONS

Cross-reference art collections 10-320 are intended to be used as a searching area for those patents which disclose an identifiable peptide or protein consisting of a sequence of at least four amino acids covalently bound through at least one normal peptide link.

Due to the nature of this class, it is important that it be considered more as a term list than as a hierarchical schedule. The classification rules of hierarchy do not apply unless otherwise specified in the art collection definitions or unless specified by one art collection being indented under another, i.e., art collections 21-25 are indented under 20, art collections 141-145 are indented under 140.

Therefore, in this class, a peptide or protein compound is placed in all art collections, regardless of order in the schedule, where the concepts of the art collection definition include the compound, unless otherwise specified.

(B) DIGESTS 500-822

Digests 500-822 are being established as U.S. classifications and are equivalent to the European Patent Office's C07K 5/00 - C07K 5/12B; C07K 7/02 - C07K 7/10B; C07K 7/50 - C07K 9/00F4; C07K 13/00; and C07K 99/00B - C07K 99/84 classifications.

The European Patent Office (EPO) uses a classification system which is based upon the International Patent Classification (IPC) system. The EPO allows its examiners to add "unofficial" or "alpha" classifications to the IPC in a manner similar to our examiners adding "unofficial" or "alpha" classifications to the U.S. Patent Clas-

sification system. With the addition of the "unofficials", the IPC becomes the European Patent Classification (EPC) system.

As U.S. (and other countries) patents are published, the EPO examiners receive them for placement into their search files. The EPO examiners do not depend upon the IPCs printed on the issuing documents for placement; they reclassify each document anew. As a result of trilateral agreements, the U.S. regularly receives the new classification data from the EPO. This classification data allows us the capability to establish digests 500 - 822 as U. S. digests which are equivalent to the EPO classifications recited in the first paragraph and which contain the same U.S. patents which EPO examiners placed into their files.

No definitions are associated with these digests. The full extent of the types of documents intended to be classified in a digest are the titles and any attached notes.

Digests 500-822 are the first areas in the U.S. classification system which are resident in the Manual of Classification and present a classification scheme wherein all of the patents have been classified by another patent office into search areas created other than by U.S. personnel.

The creation of digests 500-822 and their incorporation in the Manual of Classification is a trial program to determine the effectiveness of additional data bases which contain U.S. patents as search areas. In addition this will be the first time that U.S. examiners will be able to search EPC classifications. It is the intent of Documentation to set up other areas of the EPC where it is believed that a search area may be useful.

Digests 500-822 have been presented in a manner generally consistent with the traditional presentation of search areas in the U.S. Manual of Classification. In some instances areas in the EPC have been omitted or arranged in a format to which U.S. examiners are accustomed. In other instances the EPC classification does not contain any U.S. patents. To complete a search of a concept in the EPC it would be advisable to search both the generic subclass and the more specific indented subclass.

Patents can be added to these classifications in the traditional manner, i.e., blue slips, miscellaneous transfer, or 14B card. They can be deleted by the present method of submitting a copy of the document along with a request to classification.

At the end of each digest presented between parentheses is the classification in the EPC which translates to the digest provided for that EPC classification. To distinguish between the IPC and EPC versions it is only necessary to note that the IPC does not contain alpha designations. An example of this difference is digest 610, which is denoted as C07K-99/22. Since the latter is devoid of an alpha character it is both an IPC and EPC classification, whereas C07K-99/22A (digest 611) has an alpha designator and can only be found in the EPC. The use of a slash in the EPC designation C07K-99/ is equivalent to the use of a color in the IPC C07K-99 for this area

It is intended to maintain these digests in a form that reflects the current status of the EPC. As patents are classified into the EPC we will update the present digests to reflect the addition of the newly added documents.

In digests 550-772 and 780-822, sequences modified by removal or addition of amino acids, by substitution of amino acids by others, or by a combination of these modifications, are classified as the parent peptide when the combined number of modifications totals less than 50% of the parent fragment. Fragments of these peptides containing at least 5 amino acids, modified or not as mentioned above, are classified as the parent peptide. In digests 590, 630, and 680, the brackets have been used to indicate the presence of a specified amino acid.

A glossary has been developed for Class 930 (section D of the main class definition). Terms in the GLOSSARY have been used consistently throughout the class. The following terms are applicable only to digests 500-822.

(1) LINEAR PEPTIDES (DIGESTS 790-822) may comprise rings formed through a hydroxy or a mercapto group of a hydroxy or a mercapto amino acid and the carboxyl group of another amino acid, (e.g., peptide lactones, etc.) but do not comprise rings which are formed only through peptide links.

(2) CYCLIC PEPTIDES (DIGESTS 532-549) are peptides comprising at least one ring formed only through peptide links; the cyclisation may occur only through normal or abnormal peptide links, e.g., through the 4-amino group of 2,4-diamino-butanoic acid, etc. Cyclic compounds in which at least one link in the ring is a nonpeptide link are considered as linear peptides.

(C) AMINO ACID ABBREVIATIONS

For the purposes of all of Class 930, cross-reference art

collections 10-320 and digests 500-822, the following amino acid abbreviations are applicable:

Abbreviations and Amino Acid Names

Ala = Alanine; Arg = Arginine; Asn = Asparagine; Asp = Aspartic Acid (Aspartate); Asx = Aspartic Acid or Asparagine

Cys = Cysteine

Glu = Glutamic Acid (Glutamate); Gln = Glutamine; Gix = Glutamine or Glutamic Acid; Gly = Glycine

His = Histidine

Ile = Isoleucine

Leu = Leucine; Lys = Lysine

Met = Methionine

Phe = Phenylalanine; Pro = Proline

Ser = Serine

Thr = Threonine; Trp = Tryptophan; Tyr = Tyrosine

Val = Valine.

SECTION III - GLOSSARY

For the purposes of all of Class 930, cross-reference art collections 10-320 and digests 500-822, the following terms are appropriate as defined:

AMINO ACIDS

Compounds in which at least one amino group and at least one carboxyl group are bound to the same carbon skeleton and the nitrogen atom of the amino group may form part of a ring.

NORMAL PEPTIDE LINK

Exists between an alpha-amino group of an amino acid and the carboxyl group - in position 1 - of another alpha amino acid.

ABNORMAL PEPTIDE LINK

Exists between a nonalpha-amino group of an amino acid and the carboxyl group - in position 1 - of an alpha-amino acid, or between an alpha-amino group of one amino acid and the carboxyl group - not in position 1 - of another amino acid.

PEPTIDES

Compounds containing a sequence of 4 to 100 amino acid units, which are bound through at least one normal peptide link.

PROTEINS

Compounds containing an amino acid sequence of more than 100 amino acids, at least two of which are different, bound mostly through normal peptide links.

SUBCLASSES

10 **PEPTIDE OR PROTEIN SEQUENCE:** Cross-reference art collection for a peptide or protein consisting of an identifiable sequence of at least four amino acids covalently bound through at least one normal peptide link into a backbone structure.

(1) Note. It should be noted that the patents included in this and the indented art collections must contain an actual amino acid sequence. A patent containing a reference, in name only, to a peptide or protein compound with a known structure is not included. For example, though the amino acid sequence of insulin is well-known, unless a sequence of four or more amino acids from the insulin structure are shown in the patent, the patent is not included in these art collections.

(2) Note. Rules of placement in Cross-Reference Art Collections 10-320: A compound is placed in ALL art collections, regardless of hierarchy, where the definition concepts include the compound in question, unless an art collection note excludes a compound from one art collection after it has been placed in another. Therefore, Class 930 provides a way of narrowing or fine-tuning computer searches by the use of Boolean operators. As an example, art collection 21 (D-amino acid) can be connected with art collection 70 (corticotropin) by using "and" in order to get a listing of patents which may include corticotropin

sequences containing D-amino acids. One may alternatively use "not" and get a list of the patents with corticotropin sequences containing no D-amino acids. As another example, one may use "and" between art collection 22 (radioactive atom) and art collection 60 (calcitonin) in order to get a list of patents which may include radioactive calcitonin.

(3) Note. Patents are placed in this and the indented art collections according to the amino acid sequence or sequences disclosed in the patent. In many cases these sequences may not be part of the claimed subject matter but are disclosed in other parts of the patent.

(4) Note. In many of the indented art collections the terminology "related peptides" is used. Such a peptide can be one whose structure corresponds to at least half the amino acid residues of the named peptide, or one which is the product of side chain substitution, C or N terminal chain extension and insertion, or a replacement reaction, or a removal reaction. "Related peptides" also encompasses functional analogues of the named compound. Such analogues may also be placed in any of the other appropriate art collections.

SEE OR SEARCH CLASS:

435, Chemistry: Molecular Biology and Microbiology, subclasses 68.1 through 71.3 for methods of making a protein using an enzyme or microorganism.

514, Drug, Bio-Affecting and Body Treating Compositions, subclasses 2 through 21 for body treating compositions containing peptides.

530, Chemistry: Natural Resins or Derivatives Peptides or Proteins; Lignins or Reaction Products Thereof, subclasses 300 through 427 for peptides and proteins and methods of making and treating these peptides and proteins.

20 **Containing modified or unusual amino-acid:** Subject matter under cross-reference art collection 10 for peptides or proteins containing one or more modified or unusual amino acids.

(1) Note. The sole presence of a nonpeptide or abnormal peptide link in a linear peptide is not considered an indication of a modified or unusual amino acid.

(2) Note. Examples of amino acids included in this subclass and the indented subclasses are as follows:

glycosylated amino acids; Pyroglutamic acid;

2-Aminoadipic acid; 3-Aminoadipic acid;

beta-Alanine; beta-Aminopropionic acid;

2-Aminobutyric acid; 4-Aminobutyric acid;

Piperidinic acid; 6-Aminocaproic acid;

2-Aminoheptanoic acid; 2-Aminoisobutyric acid;

3-Aminoisobutyric acid; 2-Aminopimelic acid;

2,4-Diaminobutyric acid; Desmosine;

2,2'-Diaminopimelic acid; 2,3-Diaminopropionic acid;

N-Ethylglycine; N-Ethylasparagine;

Hydroxylysine; allo-Hydroxylysine;

3-Hydroxyproline; 4-Hydroxyproline;

Isodesmosine; allo-Isoleucine;

N-Methylglycine; Sarcosine;

N-Methylisoleucine; N-Methylvaline;

Norvaline; Norleucine; Ornithine; Statine

halogenated amino acids; D-amino acids

amino acids with a sulfur moiety

(3) Note. Compounds which are provided for in art collections 20+ are placed in all other appropriate art collections also.

SEE OR SEARCH THIS CLASS, SUBCLASS:
30, for linear peptide or protein with a nonpeptide or abnormal peptide link.

21 **Containing D-amino acid:**
Subject matter under cross-reference art collection 20 for peptides or proteins containing one or more D-amino acids.

22 **Containing radioactive atom:**
Subject matter under cross-reference art collection 20 containing a peptide or protein with an attached radioactive atom.

(1) Note. Radioactive halogen atoms, such as iodine, are proper for this art collection and are not intended for placement in art collection 23.

SEE OR SEARCH THIS CLASS, SUBCLASS:
23, for nonradioactive halogen attachments.

23 **Containing halogen:**
Subject matter under cross-reference art collection 20 containing a peptide or protein with an attached halogen.

SEE OR SEARCH CLASS:
514, Drug, Bio-Affecting and Body Treating Compositions, subclass 5 for a body treating composition with an iodine containing peptide.

24 **Containing sulfur:**
Subject matter under cross-reference art collection 20 containing a peptide or protein containing a sulfur other than a sulfur which is merely a part of one of the natural amino acids, cysteine, cystine, or methionine.

25 **Containing heavy metal or salt thereof:**
Subject matter under cross-reference art collection 20 containing a peptide or protein containing a heavy metal or salt thereof.

(1) Note. Heavy metal denotes any metal having a specific gravity greater than 4.

SEE OR SEARCH CLASS:
514, Drug, Bio-Affecting and Body Treating Compositions, subclass 6 for a body treating composition with a heavy metal containing peptide.
530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 400 for metal containing proteins.

30 **Linear peptide or protein containing a nonpeptide or abnormal peptide link:**
Subject matter under cross-reference art collection 10 containing peptides or proteins which have a nonpeptide or abnormal peptide link or bond joining two or more amino acid residues and do not comprise rings which are formed through peptide links.

(1) Note. Excluded from this art collection are compounds with nonpeptide links due only to disulfide bridges joining two or more sequences of amino-acid residues.

(2) Note. This art collection includes peptide chains containing nonpeptide moieties in the chain and chains in which the amino acid residues are joined by a peptide bond formed by other than an alpha amino acid. Examples include a compound like or gamma peptide bonding.

SEE OR SEARCH THIS CLASS, SUBCLASS:
260, for a compound with an interchain disulfide bridge.

SEE OR SEARCH CLASS:
530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 323 for peptides with at least one nonpeptide bond other than a disulfide bond and subclass 332 for a peptide containing at least one abnormal peptide link.

31 **Retro-inverted:**
Subject matter under cross-reference art collection 30 containing a peptide or protein which is retro-inverted.

(1) Note. Retro-inversion is a way of protecting peptide substances against proteolysis. It entails retro-inverting those peptide bonds most susceptible to enzymatic hydrolysis by inverting the direction of the peptide bonds. The "retro-inverso peptides" are structural isomers of the reference peptides and as such preserve their biological activity while being more resistant to enzymatic hydrolysis.

40 **Angiotensin; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to angiotensin and variations thereof, synthetic and natural.

(1) Note. Angiotensin is a pressor substance formed by the action of renin on a plasma substrate, angiotensinogen.

(2) Note. Included in this art collection are Angiotensin I, Angiotensin II, and Angiotensinogen (hypertensinogen, renin substrate).

(3) Note. Synonyms. Hypertensin, Angiotonin, Ang I, and Ang II.

(4) Note. Search digest 590 for patents related to Angiotensin.

SEE OR SEARCH CLASS:
530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 316 for angiotensin and related peptides.

50 **Atrial or brain natriuretic peptide; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to atrial or brain natriuretic peptide and variations thereof, synthetic and natural.

(1) Note. ANP is a potent natriuretic, diuretic, and vasorelaxant polypeptide.

(2) Note. Synonyms. ANP, cardionatrin, atrial natriuretic factor, ANF, atriopeptin, AP, atriopeptigen, auriculin, cardiodilatin, alpha-ANP, atrial peptide, atrial natriuretic/vasodilator polypeptide, ANVP, and BNP.

(3) Note. Related peptides include beta and gamma-ANP, ANP receptor protein, and pre-pro ANP.

60 **Calcitonin; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to calcitonin and variations thereof, synthetic and natural.

(1) Note. Physiological properties. Calcium regulation.

(2) Note. Synonyms. Thyrocalcitonin, TCA, TCT, Calcimar (salmon), Calcitar(e) (porcine), Calsyn, Elcatonin, and Ultimobranchial Body.

(3) Note. Sequence (human). Cys-Gly-Asn-Leu-Ser-Thr-Cys-Met-Leu-Gly-Thr-Tyr-Thr-Gln-Asp-Phe-Asn-Lys-Phe-His-Thr-Phe-Pro-Gln-Thr-Ala-Ile-Gly-Val-Gly-Ala-Pro-.

(4) Note. Search this class, digests 660 and 670 for patents related to calcitonin.

SEE OR SEARCH CLASS:
530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 307 for calcitonin and related peptides.

70 **Corticotropin; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to corticotropins and variations thereof, synthetic and natural.

(1) Note. Corticotropin is a pituitary hormone which stimulates release of adre-

nal cortical steroids and induces growth of adrenal cortex.

(2) Note. Synonyms. Adrenocorticotrop(h)ic hormone, ACTH, Adrenocorticotrop(h)in, Acethropan, Acortan, Acorto, Acthar, Acton, Actonar, Adrenomone, Alfatrofin, Cibacthen, Corstiline, Cortiphyson, Cortrophin, Isactid, Reacthin, Solacthyl, and Inbex.

(3) Note. Search this class, digest 570 for patents related to corticotropin (ACTH).

SEE OR SEARCH CLASS:
530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 306 for corticotropin and related peptides.

80 **Endorphin or enkephalin; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to endorphin and enkephalin and variations thereof, synthetic and natural.

(1) Note. Endorphin and enkephalin are neuro-peptides which have morphine-like activity.

(2) Note. This art collection includes alpha-, beta-, and gamma-endorphins and met- and leu-enkephalin.

(3) Note. Synonyms. Endorphin: endogenous opiate, opiod peptide, and LPH. Enkephalin: Morphine-like factor and pituitary opiate peptide.

(4) Note. Search this class, digest 720 for patents related to Beta-Endorphin and digest 740 for patents related to Enkephalin.

SEE OR SEARCH CLASS:
530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 302 for endorphin and enkephalin and related peptides.

90 **Erythropoietin; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to erythropoietin or variations thereof, synthetic and natural.

(1) Note. Erythropoietin is a circulating glycoprotein which stimulates red blood cell formation in higher organisms.

(2) Note. Synonyms. EPO, ESF, erythropoiesis stimulating factor, and Ep.

100 **Factor VIII, AHF; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to the blood coagulation Factor VIII, also called antihemophilic factor, and variations thereof, synthetic and natural.

(1) Note. Physiological properties: Involved in the formation of thromboplastin by the activation of factor X.

(2) Note. Synonyms: Anthihemophilic factor A, Thromboplastinogen, AHF-A Factor VIII, Antihemophilic A Factor, Factorate, Ristocetin cofactor, Blood platelet aggregating factor, Ristocetin-von Willebrand factor, Antihemophilic globulin, AHG, AHF, Hemofil, Humafac, Koate, and Profilate.

SEE OR SEARCH CLASS:
530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 383 for factor VIII, AHF, and related peptides.

110 **Gonadotropin; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to the gonadotropins and variations thereof, synthetic and natural.

(1) Note. Gonadotropins stimulate the gonads to growth and production of sex-specific hormones, i.e., estrogens and gestagens in the female and androgens in the male.

(2) Note. Examples. Choriogonin, Bigonadil, Choriogonadotropin, Chorulom, HCG, Follitropin, Follicle-stimulating hormone, FSH, Lutropin, Luteinizing hormone, LH, Human menopausal gonadotropin, HMG, Urogonadotropin, Chorionic gonadotropin, pregnancy urine extract, etc.

SEE OR SEARCH CLASS:
530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 398 for gonadotropins.

120 **Growth hormone, growth factor other than T-Cell or B-Cell growth factor, and growth hormone releasing factor; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to growth hormone, growth factor, or growth hormone-releasing factor and variations thereof, synthetic and natural.

(1) Note. Since urogastrone is thought to be identical to epidermal growth factor, this art collection is appropriate for urogastrone amino acid sequences.

(2) Note. Physiological properties: Growth hormone or factor: promote growth of tissues. GH is also involved in regulation of other phases of protein metabolism as well as fat, carbohydrate, and mineral metabolism. GH-RF: helps mediate the neuro-regulation of GH secretion.

(3) Note. Synonyms. Growth hormone: Somatotropin, Adenohypophyseal growth hormone, GH, hypophyseal growth hormone, anterior pituitary growth hormone, phyone, pituitary growth hormone, somatotropic hormone, STH, Antuitrin-Growth, Phyol, and Somacton. Growth hormone-releasing factor: GH-RF, GH-RH, GRF, and growth hormone-releasing hormone.

SEE OR SEARCH CLASS:
530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 399 for growth factors.

130 **Luteinizing hormone-releasing hormone (LH-RH): related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to luteinizing hormone-releasing hormone and variations thereof, synthetic and natural.

(1) Note. LH-RH stimulates secretion of pituitary hormones LH and FSH.

(2) Note. Synonyms: Luteinizing hormone-releasing factor, LH-RF, LRF, LRH, Gonadorelin, Gonadotropin-releasing factor, LH-RH/FSH-RH, Kryptocur, Relefact LH-RH, LH-RH, Gonadotropin-releasing hormone, LH-releasing factor, Luteostimulin, Lulibering Gn-RH, Gonadoliberin, LH-FSH releasing hormone, Nialutin, Hypothalamic releasing factor, LHFSHRH, Kryptocin, and Lutamin.

(3) Note. Sequence: (human) pyroGlu-His-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly

(4) Note. Search this class, digest 690 for patents related to LH-RH.

SEE OR SEARCH CLASS:
530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 313, for LH-RH.

140 **Lymphokine; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to lymphokines, and variations thereof, synthetic and natural.

(1) Note. Lymphokines are immune mediators produced by the cells of the immune system.

(2) Note. Included in this and the indented art collections are interferon, interleukin and macrophage factors (monokines).

(3) Note. List of lymphokine-related terms: Lymphokines; Monokines; Migration Inhibitory Factor (MIF); Lymphotoxin (LT); Leukocyte Migration Inhibitory Factor; (CIF); Interferons (IF); Eosino-

phil Chemotactic Factor-Precursor Substance (ECFp); Eosinophil Stimulation Promoter; Eosinophil Chemotactic Factor; Monocyte Tissue Factor; Mitogenic Factor (MF); Lymphocyte Activity-Factor (LAF); Colony Stimulating Factor (CSF); Skin Reactive Factor (SRF); Macrophage Cytoxicity Factor (MCF); Leukocyte Inhibiton Factor; Vascular Permeability Factor (VPF); T-cell Growth Factor (TCGF); B-cell Growth Factor (BCGF); Erythroid Burst Promoter; Genetically Related Macrophage; Factor (GRF); Fibroblast Activating Factor (FAF); Tumor Necrosis Factor (TNF); Macrophage Activating Factor (MAF); Chemotactic Factor for macrophages (CFM); Transfer factor (TF); Interleukin.

SEE OR SEARCH CLASS:

424, Drug, Bio-Affecting and Body Treating Compositions, subclasses 85.1 through 85.7 for lymphokines which are body treating compositions.

530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 351 for lymphokines.

141 Interleukin:

Subject matter under cross-reference art collection 140 containing peptides or proteins related to interleukin and variations thereof, synthetic and natural.

(1) Note. Interleukin is an immune mediatior which is a macrophage derived factor that promotes short term proliferation of T-cells (IL-1) or a lymphocyte derived factor that promotes long term proliferation of T-cells in culture (IL-2).

(2) Note. Synonyms. IL-1: LAF or leukocyte activating factor. IL-2: TCGF or T-cell growth factor.

SEE OR SEARCH CLASS:

424, Drug, Bio-Affecting and Body Treating Compositions, subclass 85.2 for a body treating composition of interleukin.

142 Interferon:

Subject matter under cross-reference art collection 140 containing peptides or proteins related to interferon and variations thereof, synthetic and natural.

(1) Note. Interferon is a protein elaborated by infected host cells that protects noninfected cells from viral infection.

(2) Note. This art collection includes alpha-IFN (leukocyte), beta-IFN (fibroblast), and gamma-IFN (immune).

SEE OR SEARCH CLASS:

424, Drug, Bio-Affecting and Body Treating Compositions, subclasses 85.4 through 85.7 for a body treating composition of interferon.

143 Lymphotoxin:

Subject matter under cross-reference art collection 140 containing peptides or proteins related to lymphotoxin (LT) and variations thereof, synthetic and natural.

(1) Note. Lymphotoxin is a lymphokine that results in direct cytolysis following its release from stimulated lymphocytes. It can destroy nonleucocyte target cells.

144 Tumor necrosis factor:

Subject matter under cross-reference art collection 140 containing peptides or proteins related to tumor necrosis factor (TNF) and variations thereof, synthetic and natural.

(1) Note. Tumor necrosis factor is a protein which is capable of selective cytotoxicity against tumor cells.

145 Colony stimulating factor:

Subject matter under cross-reference art collection 140 containing peptides or proteins related to colony stimulating factor (CSF) and variations thereof, synthetic and natural.

(1) Note. Colony stimulating factor is involved in the modulation of the function of phagocytes and the regulation of other tissue.

150 **Oxytocin or vasopressin; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to oxytocin and vasopressin and variations thereof, synthetic and natural.

(1) Note. Physiological properties: Oxytocin causes uterine contractions and stimulates lactation. Vasopressin controls water metabolism and contracts smooth muscle.

(2) Note. Synonyms.

Oxytocin: Di-sipidin; alpha-Hypophamine; Piton-S; Syntocin; Syntocinon; Uteracon; Nobitocin S; Syntocinone; Endopituitrina; Orasthin; Oxystin; Atonin 0; (1-Hemicystine)-Oxytocin; Presoxin; Hyphotocin; 1,2-Dithia-5,8,11,14,17 - pentaazacycloelcosane; and 8-Leucyl Vasotocin.

Vasopressin: Tonephin, beta-Hypophamine, ADH, Antidiuretic hormone, Pitressin, Vasophysin, and Leiormone.

(3) Note. Sequence.

Oxytocin: Cys-Tyr-Ile-Gln-Asn-Cys-Pro-Leu-Gly.

Vasopressin: Cys-Tyr-Phe-Gln-Asn-Cys-Pro-Arg-Gly.

(4) Note. Search this class, digest 560 for patents related to oxytocin or vasopressin.

SEE OR SEARCH CLASS:
530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 315 for oxytocin and vasopressin.

160 **Somatostatin; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to somatostatin and variations thereof, synthetic and natural.

(1) Note. Physiological properties. Inhibits secretion of pituitary growth hormone.

(2) Note. Synonyms. Growth hormone releasing-inhibiting factor (GH-RIF) and Somatotropin release inhibiting hormone (SRIF).

(3) Note. Sequence. Ala-Gly-Cys-Lys-Asn-Phe-Phe-Trp-Lys-Thr-Phe-Thr-Ser-Cys.

(4) Note. Search this class, Digest 700 for patents related to somatostatin.

SEE OR SEARCH CLASS:
530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 311 for somatostatin.

170 **Vasoactive intestinal peptide; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to vasoactive intestinal peptide and variations thereof, synthetic and natural.

(1) Note. Vasoactive Intestinal Peptide is a neuroactive gastrointestinal hormone that relaxes systemic and vascular smooth muscle and stimulates the exocrine pancreas, the secretion of insulin and of cyclic-AMP formation in the small intestine.

(2) Note. Synonyms. Vasoactive intestinal polypeptide and VIP.

180 **Thymus-derived hormone or factor; related peptides:**
Subject matter under cross-reference art collection 10 containing peptides or proteins related to thymus derived hormones or factors and variations thereof, synthetic and natural.

(1) Note. Examples of thymus derived peptides include thymopoietin (Thymin), thymosin, etc.

(2) Note. Search this class, digest 750 for patents related to thymopoietin.

SEE OR SEARCH CLASS:
530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclass 301 for thymopoietin.

190 **Antibiotic:**
Subject matter under cross-reference art collection 10 containing peptides or proteins which are either natural or synthetic antibiotics.

200 **Bacterial peptide or bacterial protein:**
Subject matter under cross-reference art collection 10 containing peptides or proteins homologous to the bacteria and variations thereof, synthetic and natural.

(1) Note. A homologous polypeptide is one found in or produced by the wild type (nontransformed) host microorganism.

SEE OR SEARCH CLASS:
424, Drug, Bio-Affecting and Body Treating Compositions, 190.1 for a bacterial antigen-, epitope-, or other immunospecific immunoeffector-containing body-treating composition whose amino acid sequence is disclosed in whole or in part.
435, Chemistry: Molecular Biology and Microbiology, subclasses 252.1 through 253.5 for bacteria, per se.

210 **Parasitic peptide or parasitic protein:**
Subject matter under cross-reference art collection 10 containing peptides or proteins which are homologous to the parasite and variations thereof, synthetic and natural.

(1) Note. See Note (1) under art collection 200 for the definition of homologous.

SEE OR SEARCH CLASS:
424, Drug, Bio-Affecting and Body Treating Compositions, subclass 191.1 for a parasitic antigen-, epitope-, or other immunospecific immunoeffecor-containing body-treating composition whose amnio acid sequence is disclosed in whole or in part.

220 **Viral peptide or viral protein:**
Subject matter under cross-reference art collection 10 containing peptides or proteins homologous to the virus and variations thereof, synthetic and natural.

(1) Note. See Note (1) under art collection 200 for the definition of homologous.

SEE OR SEARCH CLASS:
424, Drug, Bio-Affecting and Body Treating Compositions, subclasses 186.1+ for a viral antigen-, epitope-, or other immunospecific immunoeffector-containing body-treating composition whose amino acid sequence is disclosed in whole or in part.
435, Chemistry: Molecular Biology and Microbiology, subclass 235 for virus, per se.

221 **Retrovirus related, or human immunodeficiency virus related, or simian immunodeficiency virus related:**
Subject matter under cross-reference art collection 220 containing peptides or proteins related to the retrovirus, or the human immunodeficiency virus (HIV), or the simian immunodificiency virus (SIV) and variations thereof, synthetic and natural.

(1) Note. Included in this art collection are viral sequences related to human T-cell leukemia virus, human T-lymphotropic virus, HTLV, HTLV-I, HTLV-II, HTLV-III, lymphadenopathy-associated virus, LAV, AIDS-related virus, ARV, immune deficiency-associated virus, IDAV, STLV-I, STLV-III, and viral sequences related to the disease states of acquired immune deficiency syndrome, acquired immunodeficiency syndrome, AIDS, adult T-cell leukemia-lymphoma, ATLL, Kaposi's sarcoma, AIDS-related complex, ARC, simian or mouse acquired immunodeficiency syndrome, SAIDS, and MAIDS.

SEE OR SEARCH CLASS:
424, Drug, Bio-Affecting and Body Treating Compositions, subclass 187.1 and 188.1 for a retrovial (including immunodeficiency viral) antigen-, epitope-,

or other immunospecific immunoeffector-containing body-treating composition whose amino acid sequence is disclosed in whole or in part.

222 **Foot and mouth disease related:**
Subject matter under cross-reference art collection 220 containing peptides or proteins related to the Foot and Mouth Disease Virus which is a small animal virus of the picornavirus family and peptide variations thereof, synthetic and natural.

223 **Hepatitis related:**
Subject matter under cross-reference art collection 220 containing peptides or proteins related to the hepatitis virus and variations thereof, synthetic and natural.

SEE OR SEARCH CLASS:
424, Drug, Bio-Affecting and Body Treating Compositions, subclass 189.1 for a hepatitis viral antigen-, epitope-, or other immunospecific immunoeffector-containing body-treating composition whose amino acid sequence is disclosed in whole or in part.

224 **Herpes related:**
Subject matter under cross-reference art collection 220 containing peptides or proteins related to the herpes virus and variations thereof, synthetic and natural.

230 **Multicellular plant peptide or multicellular plant protein:**
Subject matter under cross-reference art collection 10 containing peptides or proteins derived from multicellular green or nongreen plants and variations thereof, synthetic and natural.

SEE OR SEARCH CLASS:
530, Chemistry: Natural Resins or Derivatives; Peptide or Proteins; Lignins or Reaction Products Thereof, subclasses 370 through 379 for plant proteins.

240 **Enzyme or isoenzyme:**
Subject matter under cross-reference art collection 10 containing peptides or proteins which are enzymes or isoenzymes.

(1) Note. Proenzymes or precursors of enzymes are appropriate for this art collection.

SEE OR SEARCH CLASS:
424, Drug, Bio-Affecting and Body Treating Compositions, subclasses 94.1 through 94.67 for enzymes or coenzymes containing body treating compositions.
435, Chemistry: Molecular Biology and Microbiology, subclasses 183 through 234 for enzymes and compositions thereof.

250 **Enzyme inhibitor:**
Subject matter under cross-reference art collection 10 containing peptides or proteins which are active as enzyme inhibitors.

260 **Containing Cys-Cys disulfide bridge between nonadjacent cysteine residues:**
Subject matter under cross-reference art collection 10 containing peptides or proteins containing a cys-cys disulfide bridge between nonadjacent cysteine residues such as in the case of at least one intrachain disulfide bridge (cyclic) or at least one interchain disulfide bridge.

(1) Note. This art collection contains only those compounds containing a cys-cys disulfide bridge for which there are no appropriate named compound art collections available (art collections 40-170) such as those for ANP or vasopressin.

SEE OR SEARCH CLASS:
514, Drug, Bio-Affecting and Body Treating Compositions, subclasses 9 through 11 for cyclopeptides.

270 **Cyclic peptide or cyclic protein:**
Subject matter under cross-reference art collection 10 containing peptides or proteins which contain at least one ring formed through a peptide or nonpeptide bond.

(1) Note. In addition to the cyclic peptides containing at least one ring formed only through peptide bonds, included in this subclass are those cyclic compounds in which the peptide bond may be other

than that formed by the alpha amino nitrogen, e.g., through the 4-amino group of 2,4 diamino butanoic acid and the cyclic compounds in which one or more links in the ring are nonpeptide bonds (heterodectic cyclic peptides).

(2) Note. Excluded from this art collection are those compounds which are cyclic because they contain intrachain disulfide bridges and those compounds appropriate for art collections 40-170.

SEE OR SEARCH THIS CLASS, SUBCLASS:

260, for compounds with intrachain cys-cys disulfide bridges.

SEE OR SEARCH CLASS:

514, Drug, Bio-Affecting and Body Treating Compositions, subclasses 9 through 11 for cyclopeptides in body treating compositions.

530, Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof, subclasses 317 through 321 for cyclic peptides.

280 **Bound to a nonpeptide drug, nonpeptide label, nonpeptide carrier, or nonpeptide resin:**

Subject matter under cross-reference art collection 10 containing peptides or proteins which are bound to a nonpeptide drug, nonpeptide label, nonpeptide carrier, or nonpeptide resin.

(1) Note. Subject matter intended for this subclass includes peptides coupled to luminol or a chromogenic indicator, peptide coupled to a carrier to enhance antibody production, peptide coupled to an acrylamide copolymer, peptide coupled to an antibiotic, etc.

290 **Polyamino acid or polypeptide with an uninterrupted series of peptide repeating units:**

Subject matter under cross-reference art collection 10 containing a peptide or protein which is a polymer of the same amino acids or is composed of a series of peptide repeating units.

(1) Note. A series of peptide repeating units is intended to mean that an amino acid sequence of two or more amino acid residues is sequentially repeated two or more times in the peptide or protein in uninterrupted sucession.

300 **Signal or leader sequence:**

Subject matter under cross-reference art collection 10 containing a peptide sequence denoted as a signal or leader.

(1) Note. The terms signal or leader are usually associated with the production of proteins by a recombinant microorganism. The signal or leader sequence is an amino acid chain at the N-terminal end of the protein which carries the protein out of the microbial cell.

310 **Linker sequence:**

Subject matter under cross-reference art collection 10 containing a peptide sequence denoted as a linker sequence or peptide segment.

(1) Note. Such linkers or segments are the connections for fused polypeptides. The linker acts either as an enzyme cleavage site or has physical and/or chemical characteristics which can be used in isolation and/or purification of the expressed protein.

320 **Modification to prevent enzymatic degradation:**

Subject matter under cross-reference art collection 10 containing a peptide or protein which has been modified to prevent enzymatic degradation.

(1) Note. This art collection is not complete. Only patents in which the modification is a central part of the patent subject matter are placed here except for those directed to retro-inversion.

SEE OR SEARCH THIS CLASS, SUBCLASS:

31, for retro-inverted peptides or proteins.

END